

DEDUCTIVE REASONING AND DECISION MAKING

Chapter 12

THINKING:

- Judgment & Decision Making
- Reasoning and
- Problem Solving

LOGICAL REASONING

Reasoning.

Deductive Reasoning

LAWS OF LOGIC

Laws of logic

Laws of logic

2 TYPES OF LOGICAL REASONING

Syllogisms:

- Some A's are B's.
- Some B's are C's.
- Therefore, some A's are C's

- Some women are Democrats.
- Some Democrats are men.
- Therefore, some women are men.

Conditional Reasoning or Prepositional Reasoning Problems

- If the moon is shining, I can see without a flashlight.
- I cannot see without a flashlight.
- Therefore, the moon is not shining

**Basic Terminology of
Conditional Reasoning Problems**

Antecedent:

Consequent:

Affirming the antecedent:

"Modus Ponens"

Affirming the consequent:

Denying the antecedent:

Denying the consequent: you say that the "**then...**" part is **false**.

<u>Action Taken</u>	<u>ANTECEDENT</u>	<u>CONSEQUENT</u>
AFFIRM	(VALID) This is an apple; therefore this is a fruit.	(INVALID) This is a fruit; therefore this is an apple.
DENY	(INVALID) This is not an apple; therefore, this is not a fruit	(VALID) This is not a fruit; therefore this is not an apple.

These differ in difficulty.

Factors Affecting Conditional Reasoning

- **Abstractness:**
 - If an object is red, then it is rectangular.
 - This object is not rectangular.
 - Therefore, it is not red.

- **Negation**
 - If an object is not blue, then it is rectangular.
 - This object is not rectangular.
 - Therefore, it is blue.

ERRORS IN CONDITIONAL REASONING

- **CONFIRMATORY BIAS:**
- **WASON'S (1966) SELECTION TASK**
 - Given a deck of cards with a number on one side & a letter on the other.
 - **Hypothesis:** If a card has a **vowel** on one side, then it will have an **even #** on the other.
 - **Task:** Which of these cards need to turn over in order to find out whether this rule is true or false?

- People do better if given more **concrete problem**.
- Griggs & Cox (1982)** tested Florida college students. (At that time drinking age was 19.)

GRIGGS & COX (1982)

- Imagine that you are a police officer on duty. It is your job to ensure that people conform to certain rules. The cards in front of you have information about four people sitting at a table. On one side of a card is a person's age and on the other side is what the person is drinking.
- Here is a rule: **IF A PERSON IS DRINKING BEER, THEN THE PERSON MUST BE OVER 19 YEARS OF AGE.**

- Belief Bias Effect:**

- Example of a heuristic:**

- MAKING ONLY ONE MODEL**

- If she meets her friend, then she will go to a play.
- She did not meet her friend.
- Therefore, ...

- FAILURE TO TRANSFER KNOWLEDGE TO A NEW TASK**

DECISION MAKING

See Discovering Psychology Handout: Problem Solving and Decision Making.

BIASES IN JUDGMENTS:

Availability heuristic

Availability heuristic & base-rate fallacy:

Representativeness heuristic and conjunction fallacy.

■ **Representativeness heuristic**

■ **Conjunction fallacy**

Anchoring effect

Risky Choices and Framing Effects

Hindsight bias